

Alg 2

Review = 6-3-6-6  
#1

Name POST KEY

Rewrite each equation in exponential form.

①  $\log_{14} \frac{1}{196} = -2$       $14^{-2} = \frac{1}{196}$

②  $\log_3 81 = 4$       $3^4 = 81$

Rewrite each equation in logarithmic form.

③  $9^{-2} = \frac{1}{81}$       $\log_9 \frac{1}{81} = -2$

④  $\left(\frac{1}{12}\right)^2 = \frac{1}{144}$       $\log_{\frac{1}{12}} \frac{1}{144} = 2$

Find the inverse of each function.

⑤  $y = 5^x - 8$

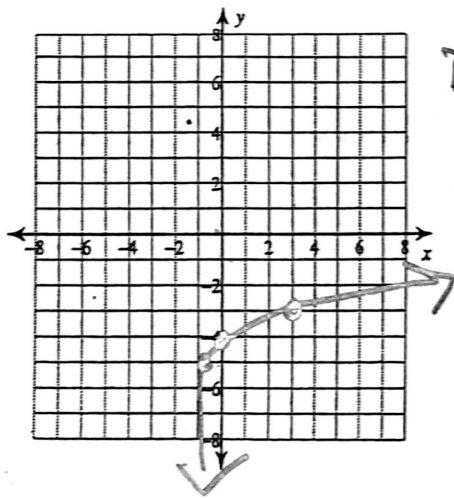
$f^{-1}(x) = \log_5(x+8)$

⑥  $y = \log_2(x+5) - 9$

$2^{x+9} - 5 = f^{-1}(x)$

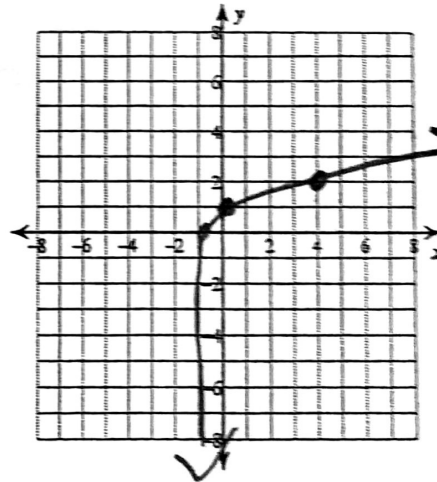
Identify the domain and range of each. Then sketch the graph.

⑦  $y = \log_4(x+1) - 4$



D  $x > -1$   
R  $\mathbb{R}$

⑧  $y = \log_5(x+1) + 1$



D  $x > -1$   
R  $\mathbb{R}$

Expand each logarithm.

⑨  $\log \frac{x}{y^6}$

$\log x - 6 \log y$

⑩  $\log(a \cdot b)^2$

$2 \log a + 2 \log b$

Condense each expression to a single logarithm.

$$\textcircled{11} \quad 6\log_3 u + 6\log_3 v \\ -\log(uv)^6$$

$$\textcircled{13} \quad \log_4 u - 6\log_4 v \\ \log_4 \left( \frac{u}{\sqrt[6]{v}} \right)$$

Use the calculator to evaluate.

$$\textcircled{15} \quad \log_2 2.9$$

$$\approx 1.536$$

$$\textcircled{12} \quad \ln x - 4\ln y$$

$$\ln \left( \frac{x}{y^4} \right)$$

$$\textcircled{17} \quad 2(\log 2x - \log y) - (\log 3 + 2\log 5)$$

$$\log \left( \frac{4x^2}{75y^2} \right)$$

$$\textcircled{16} \quad \log_6 22$$

$$\approx 1.725$$

Solve each equation.

$$\textcircled{19} \quad \log 5x = \log(2x+9)$$

$$x = 3$$

$$\textcircled{20} \quad \log(10-4x) = \log(10-3x)$$

$$x = 0$$

$$\textcircled{21} \quad -10 + \log_3(n+3) = -10$$

$$n = -2$$

$$\textcircled{22} \quad -2\log_5 7x = 2$$

$$x = \frac{1}{35}$$

$$\textcircled{23} \quad \log_8 2 + \log_8 4x^2 = 1$$

$$x = \pm 1$$

$$\textcircled{24} \quad \log_9(x+6) - \log_9 x = \log_9 2$$

$$x = 6$$